COMPU-READ

Age 8 through Adult.
To improve reading speed,
recall, and test-taking skills. This
documentation includes
instructions for Apple II, II+,
Apple IIe, Franklin Ace, Atari
Diskette, and Atari Cassette.

**THE SCIENCE
OF LEARNING**

Letters
Words
Synonyms
Sentences

EDUWARE

COMPU—READ 3.0
User Documentation

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COMPU-READ 3.0 Program and Documentation
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ACKNOWLEDGEMENTS

COMPU-READ 3.0 was developed exclusively by Edu-Ware Services, Inc., a California software development company dedicated to the production of instructionally valid C.A.I. and intellectually challenging games.

It took the efforts of a number of individuals to bring this product to fruition:

Sherwin Steffin created the basic instructional design which led to the development of the COMPU-READ 3.0 Programs, and was the primary author of the previous Version 2.0 of the same system. He wrote all of the documentation, including the description of the Instructional Model.

David Mullich coded the entire set of programs, for both the Apple and Atari versions, and was the designer of the SYSTEM GENERATOR which is the heart of this new system.

Steven Pederson developed the Edu-Ware high-resolution (upper and lower case) font used throughout these programs.

Scott Clapp was responsible for all system testing of the Apppple Version, and made a number of significant scoreboard modification suggestions.

Steven Barr was responsible for all system testing of the Atari Version of these programs.

I. INTRODUCTION

1. What is COMPU-READ 3.0?

COMPU-READ 3.0 is a response to a strongly felt need
on the part of many school and consumer computer
owners to have available an integrated system for the
improvement of reading skills. This series of four
learning experiences in reading, coupled with
extensive utilities is designed to answer that need.

For almost two years, Edu-Ware sold COMPU-READ Version
2.0, and many thousands of these programs are still
being used in various settings. Yet, Compu-Read 2.0
was among the oldest programs in the Edu-Ware
inventory. As such, it lacked both the instructional
quality and programming sophistication which have
become a hallmark of more recent Edu-Ware product
developments. The remediation of these deficits
provided the rationale for the development of this
completely new version of COMPU-READ.

The four learning experiences span the range from the
youngest reader to the skilled adult who wishes to
improve his reading speed and recall.

These goals are achieved through the use of a variety
of features:

**   Display of all letters is provided in upper and
      lower case, and is available in double size
      letters in three of the four programs. (Because
      of the potential length of sentences, the
      SENTENCES UNIT has only unit-size letters
      available.) This exclusive Edu-Ware high
      resolution font has been specifically designed
      with the intent of providing maximum legibility
      to the user, regardless of screen format
      employed.

** A SYSTEM GENERATOR provides control of a variety of learning parameters allowing flexibility in prescribing the difficulty and challenge of reading tasks.

** File building routines, with user-friendly editing features make possible a range of data bases. These may be utilized to vary the level of challenge of the reading tasks presented.

** A graphic and numeric reporting system giving the learner complete data about his progress and reading rates.

** Program design suitable for both adjunct and stand-alone learning in both home and classroom environments.

** Detailed documentation which describes both the system, and the instructional model upon which it is premised.

2. Quick Entry Usage

If you are one of those users who would rather use the system before reading further, you can do so by following this quick guide:

APPLE Users:

(A) Boot the diskette. This disk will operate with either 3.2.1, or 3.3 DOS. If you have difficulty in booting the disk, consult your DOS Manual for assistance. A few seconds of disk activity causes an Edu-Ware identification to appear on the screen. The COMPU-READ 3.0 Master Menu appears next. If you prefer, the entire system will run automatically. The following Learning Experiences require data base files which have already been pre-set: WORDS AND PHRASES; SYNONYMS AND ANTONYMS; SENTENCES.

(B) To use any of the programs, follow the screen directions as they appear; at the completion of the program, a "report card" will be displayed, showing you how well you have done. Exit the program using screen directions.

(C) To use the SYSTEM GENERATOR to make modifications in the programs, press the [RIGHT ARROW] key when the Edu-Ware identification first appears. This action will cause a jump to the SYSTEM GENERATOR before going to the Master Menu. Make any desired modifications to the parameters shown. Use the documentation for additional help.

ATARI Users

At startup, leave power off both the disk drive and the computer; insert the COMPU-READ diskette in the drive, and close the latch; turn on the TV set, and power for the drive; when disk activity stops, turn on the computer.

The [RIGHT ARROW] function referred to in the documentation is replaced with [CTRL] [RIGHT ARROW] when using the Atari 800.

3. Using the Documentation

The remainder of this documentation is designed to give you much greater control in using these programs for your own learning, or that of a student. You also develop an understanding of the program design rationale.

You will find some general comments on the care and feeding of your diskettes. Should a problem occur, be certain to read the Limited Warranty at the end of this material, and follow the directions exactly.

II. THE INSTRUCTIONAL MODEL

Before proceeding with further operating instructions, it seems appropriate to discuss the rationale which has been employed in constructing the instructional model:

1. Effective reading requires the perception of patterns.

If we are able to recall our own struggle to acquire reading skills, most of us will remember being first taught to recognize and identify individual letters. Next came combinations of letters into words, or word groups. Finally we learned to assemble long strings of words into complete thoughts or sentences. Yet, analysis of eye movements clearly demonstrates stopping and starting, and at times reversal of direction of eye fixation (attention). The net effect of these interruptions is a reduction in smooth "scanning" of printed material and a net decrease in the speed by which the information contained within is processed.

The printed page offers a stimulus situation to the reader which is relatively uncontrollable by outside influences, and certainly difficult to measure in terms of specific performance. Over the years educators have attempted to remediate these kinds of non-optimal reading situations through the use of a tachistoscope. This device projects letters, words, and sentences at a controlled rate upon a reflective screen as is used with a motion picture projector. Such control devices greatly enhance the ability of the user (teacher, reading instructor) to control the reading experience for the learner. However, the major problem with such devices was that the specific

software employed was for the most part completely
unmodifiable by the user; i.e., the data base was
supplied by the manufacturer.

The microcomputer allows users complete control of the
data base and a number of variables which were
heretofore unavailable for adjustment.

2. Users and learners require immediate feedback as to performance.

In order for the learner and the user to both have
knowledge of performance (and for teacher grading
purposes) we have provided a number of displays which
provide both user and learner this information. These
displays indicate the number of trials, the number of
right and wrong, and the percentage of correct trials
for each of the learning experiences. Of perhaps
greater interest is a graphic display that appears in
the lower right hand corner of the screen. This
display consists of a series of vertical lines. Each
vertical line represents a percentage of change
between that trial and the trial immediately preceding
it. An increase in size between adjacent bars
represents a correct response, and a corresponding
increase in display speed, while a decrease represents
a failure in the previous trial. Interpretations of
these graphs can be used as guidelines by the user in
resetting parameters and assessing student
performance.

Figure 1a shows the performance pattern demonstrated
by a learner when the initial speed/difficulty level
was far below what the student was able to perform at
system entry. The continuously increasing display
speeds are indicative of the fact that the learner
found no challenge since he was consistently able to
get all the trials correct. However, for the learner
who is timid, or who has a poor self-concept with

respect to his reading abilities, the ease of mastery
may lead to an improved self-concept.
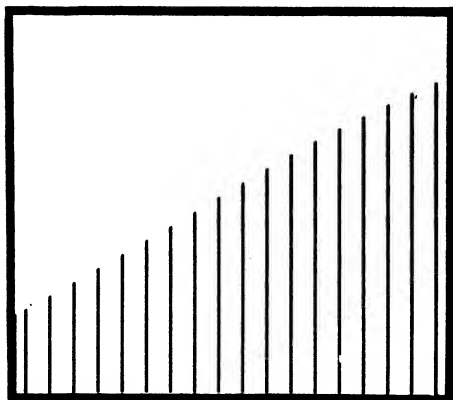
1a. too easy

Figure 1b represents the converse to the learning
environment demonstrated in 1a. In this instance, the
learner was presented with tasks far to difficult for
him to master. At no point was he able to achieve
success in any portion of the learning experience.
Users seeing such patterns should be quick to modify
the parameters. The performance demonstrated the
learner's inability to cope with the difficulty of the
task.
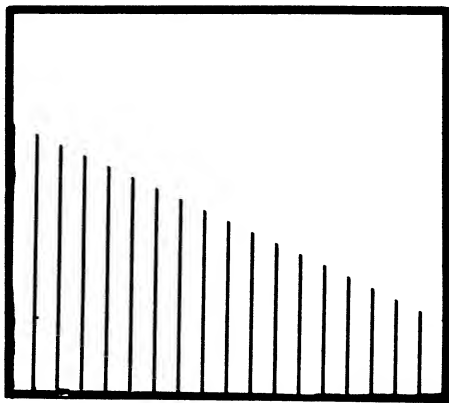
1b. too difficult

In figure 1c we have a situation which may be considered ideal. The learner has a number of files in which he is unable to initially meet the task demands. Then he begins to level out, getting some trials correct and some incorrect. In the last third of the curve, he begins to master the learning task and eventually ends with the maximum display speed possible for this particular series of trials.
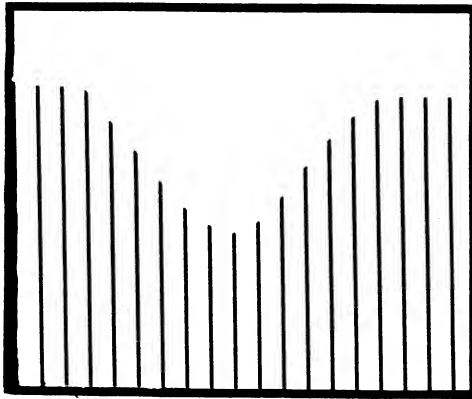
1c. skills gained

Figure -1d represents a situation in which the trials
are not initially demanding of the learner, and at
some point in the series he begins to "plateau" out;
i.e., he reaches a point at which he is unable to move
beyond his current learning, but is able to maintain
it.   One would expect in this kind of graph, that the
appropriate response on the part of the user is to
extend the number of trials so that new learning can
begin to occur after the plateau.
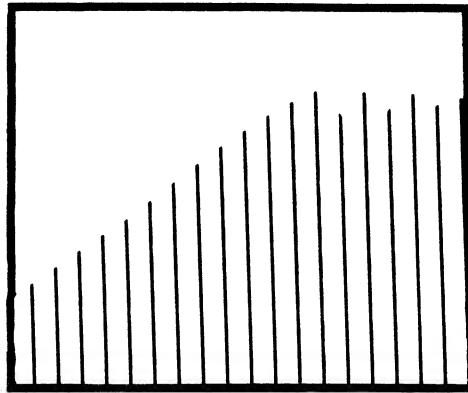
1d. learning plateaus

Finally, figure 1e illustrates a situation in which the learner finds the task too difficult, begins to fail, plateaus out, and is unable to demonstrate new learning. The appropriate response on the part of the user in this case, may well be to start the next series at the last point in the plateau, so that the learner can begin to master new tasks from the plateau. Small increments of time should be employed so that new learning and task difficulty proceed in small steps.
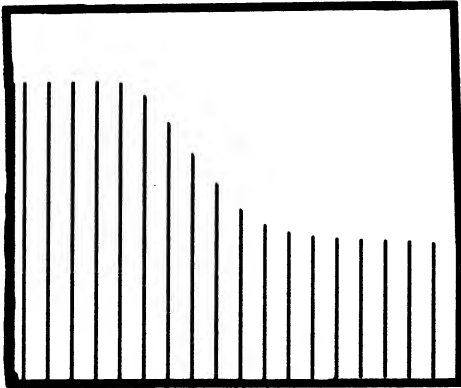
1e. starts too difficult
then plateaus

Users will be certain to discover other patterns and make other adjustments. The descriptive statements shown above are only to be taken as suggestions. Users may wish to make a variety of interpretations of the displays which they see, and to develop a variety of learning sequences best suited to the learners with whom they are dealing.
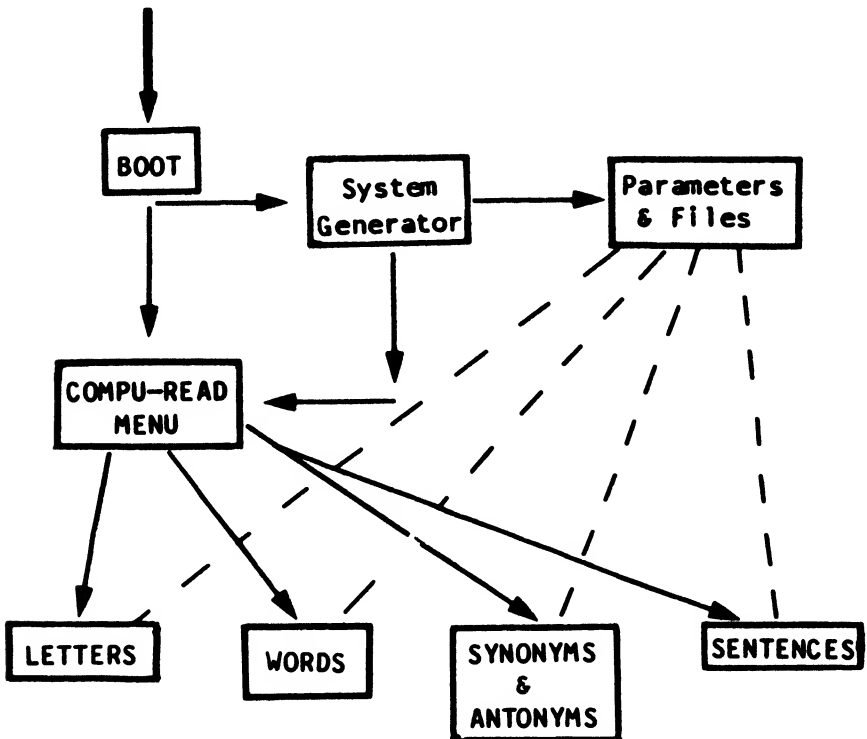
III. USING THE PROGRAMS

1. General Description

COMPU-READ 3.0 represents a comprehensive reading system. It is designed to span the range from the

youngest reader at the primary school level to the
adult reader wishing to improve his speed and recall
of printed material. As such, it consists of a number
of components, illustrated in the graphic flow chart
shown below in figure 2.

Figure 2   THE COMPU-READ SYSTEM

```
                    |
                    v
      ┌────────┐        ┌──────────┐        ┌────────────┐
      │  BOOT  │───────▶│  System  │───────▶│ Parameters │
      └────────┘        │Generator │        │  & Files   │
           │            └──────────┘        └────────────┘
           │                 │
           v                 v
   ┌──────────────┐
   │ COMPU-READ   │◀────
   │    MENU      │
   └──────────────┘

  ┌─────────┐   ┌───────┐   ┌──────────┐   ┌───────────┐
  │ LETTERS │   │ WORDS │   │ SYNONYMS │   │ SENTENCES │
  └─────────┘   └───────┘   │    &     │   └───────────┘
                            │ ANTONYMS │
                            └──────────┘
```

2. The SYSTEM GENERATOR

In order to fully utilize the programs, users will
want to make their own adjustments in the defaulted
parameters which have been installed for each of th

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current units. Thus, a SYSTEM GENERATOR is provided
which allows the user maximum flexibility in his
prescription of the learning sequence.

If you are an individual user of these programs, you
will want to build your own files for practice, set
your own speed, and develop the sequence best suited
to your learning. On the other hand, if you are a
parent or a teacher helping students to learn reading,
you will be particularily concerned with adjusting
this system to each learner. In either event, the
SYSTEM GENERATOR is provided for this purpose. It is
accessed at the time of the boot program. As soon as
the disk is loaded, an Edu-Ware identification will
appear on the screen. If you wish to go into the
SYSTEM GENERATOR, simply press the [RIGHT ARROW] key
once while the Edu-Ware identification is on the
screen, but before disk activity initiates again. If
you do not press the [RIGHT ARROW] key at this time,
the boot program will go directly into the COMPU-READ
menu as shown in the figure below. To return to the
SYSTEM GENERATOR, simply re-boot the disk after
pressing [RESET]. If, on the other hand, you wish to
go from the boot program directly into the COMPU-READ
menu, do not touch the [RIGHT ARROW] key. This will
be the case after you have set up the SYSTEM GENERATOR
and have handed the diskette to a learner. He will
boot the diskette, and go directly to the prescribed
COMPU-READ menu.

The SYSTEM GENERATOR consists of five sub-programs.
They are:

    [1] Learning Sequence

    [2] Learning Parameters
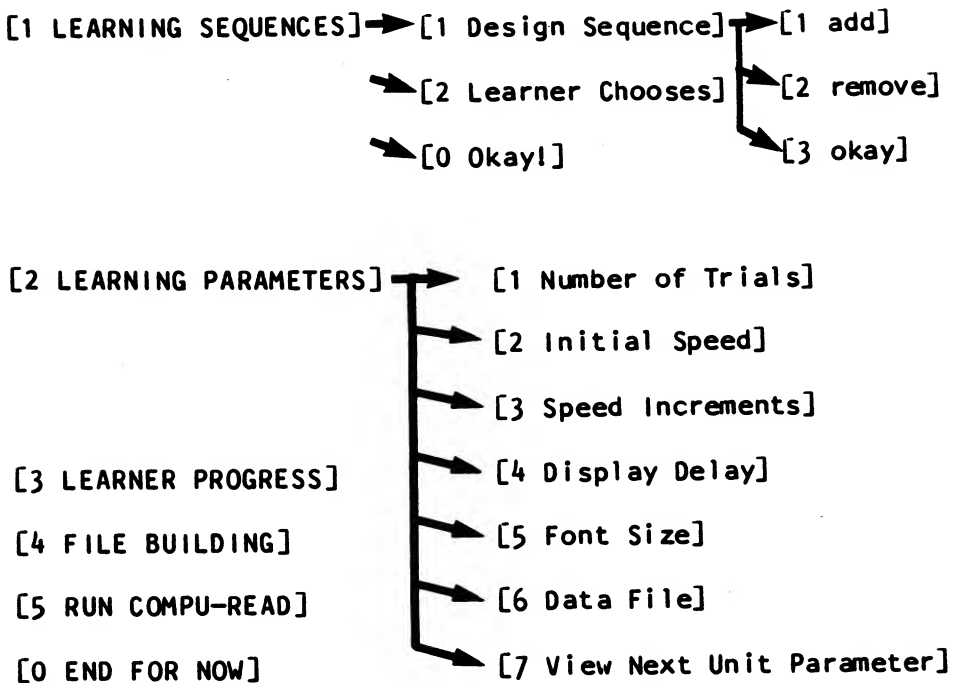
    [3] Learner Progress

[4] File Builders

[5] Run COMPU-READ

Another choice provided is the [0] (Zero Key), which allows you to exit the system completely.

A flow chart for this system is illustrated below in figure 3.

Figure 3   SYSTEM GENERATOR

[1 LEARNING SEQUENCES]➡[1 Design Sequence]➡[1 add]

➤[2 Learner Chooses]   ➤[2 remove]

➤[0 Okay!]   ➤[3 okay]

[2 LEARNING PARAMETERS]➡   [1 Number of Trials]

➤[2 Initial Speed]

➤[3 Speed Increments]

[3 LEARNER PROGRESS]   ➤[4 Display Delay]

[4 FILE BUILDING]   ➤[5 Font Size]

[5 RUN COMPU-READ]   ➤[6 Data File]

[0 END FOR NOW]   ➤[7 View Next Unit Parameter]

SYSTEM GENERATOR/[1] LEARNING SEQUENCE

These parameters allow you to make decisions about
what sequence you want the learner to follow in going
through the Compu-Read programs. To make your own
adjustments in this sequence, press [1]. A sub-menu,
giving you three options will appear. The first of
these allows you to design the sequence for the
learner. The second, which is the defaulted variable,
allows the learner to choose his own sequence. The
third indicates that you are satisfied with your
selection and are ready to return to the SYSTEM
GENERATOR menu.

Assume you wish to allow the learner only to do "[1]
LETTERS," and "[2] WORDS," since he is ready for
neither the SYNONYMS/ANTONYMS nor the SENTENCES unit.
Once in the LEARNING SEQUENCE menu, press "[1] DESIGN
LEARNING SEQUENCE." A defaulted learning sequence will
appear on the screen. To remove the SYNONYMS/ANTONYMS
unit and the SENTENCES unit, press "[2] REMOVE UNIT."
You are then asked which unit you wish to remove. If
you have changed your mind and you don't wish to
remove any units, press [0] (Zero Key). To remove the
SENTENCES, press [4]. The display will now show the
learning sequence with numbers [1], [2], and [3], but
without [4]. Now continue to remove the
SYNONYMS/ANTONYMS unit by pressing "[2] REMOVE UNIT"
again, at which point you will see the question
"Remove which unit (0-3)?" Press [3], which will cause
the screen to change and display two units.

If you now decide you wish to return the SENTENCES
unit, making three units available to the learner,
press "[1] ADD UNITS." The two units which have been
removed will be shown on the screen on the left hand
side. Since you wish to add SENTENCES to the
sequence, select "[2] SENTENCES," which allows you to
replace the SENTENCES in the learning sequence.

By judicious adding and removal of the units, you are free to place all four units, or three, or two, in any sequence you choose.

After you have completed making all adjustments in the learning sequence, press [0] (Zero Key). This returns you to the LEARNING SEQUENCE menu. Then press [0] (Zero Key), which jumps you to the SYSTEM GENERATOR. All the changes you have made will be stored in memory until you have completed the SYSTEM GENERATOR adjustments.

SYSTEM GENERATOR/[2] LEARNING PARAMETERS.

This section of the SYSTEM GENERATOR allows you to adjust parameters for each of the learning units. They are sequenced in order from LETTERS, WORDS, SYNONYMS/ANTONYMS, to SENTENCES. As soon as you have elected this section of the SYSTEM GENERATOR, the Learning Parameters/LETTERS menu will appear. There are seven choices, plus a "[0] Okay," which returns you to the SYSTEM GENERATOR menu.

[2]/[1] Number of Trials

The number of trials refers to the number of times the learner will attempt the reading task presented in that unit. The preset default is twenty-five. To change this, press "[1] Number of trials." A question at the bottom of the screen will ask you to enter the number of trials. You may enter any number from 1 to 999. When you have entered the number, press [RETURN]. The screen will change, showing the new number that you have entered. You may change this number as often as desired.

[2]/[2] Initial Speed

Initial Speed is that period of time for which

the letters will be displayed on the screen
before disappearing. The number which you see in
the square is in seconds. The current default is
.2 or two tenths of a second. You may display
any time from .001 (one thousandth or one
millisecond) to ten seconds. To change this
initial speed, press "[2] Initial Speed," and
answer the question which appears on the bottom
of the screen. Then press [RETURN] which will
display the new initial speed on the screen.

[2]/[3] Speed Increment

The Speed Increment refers to the amount of
change in the display speed that occurs with each
trial. The display speed will either decrease or
increase by this increment, depending upon
whether the learner is correct or incorrect in
his previous trial. To use the Speed Increment
press "[3] Speed Increment," and input is shown
on the screen. You may increment in any amount
larger than one thousandth of a second (one
millisecond). Enter the incremental number and
then press [RETURN] to return to the display.

[2]/[4] Display Delay

After the completion of each trial, the learner
is given an instruction to [PRESS SPACE BAR TO
CONTINUE]. This variable refers to the time
elapsed between test items, or the press of the
space bar and the next display of the test item
on the screen. To change this default, press
"[4] Display Delay," and answer the question at
the bottom of the screen. The range is again,
from one millisecond to ten seconds. As before,
press [RETURN] to return to the parameters
display.

[2]/[5] Font Size

Two sizes of letters are available for display.
Small letters are standard text screen height (24
lines of 40 characters). Large letters are
double this size, giving a character display of
12 lines of 20 characters. The default currently
selected is large letters. If you wish to change
this, select the LETTERS menu by pressing [5] and
then select the number which represents the font
size you wish to use. When you have done so,
press [0] (Zero Key) and return to the parameter
display.

[2]/[6] Data File

For all of the units, but the LETTERS unit, data
files are available to the user. These are
WORDS, SYNONYMS/ANTONYMS, or SENTENCES. Since no
files are used with the LETTERS program, pressing
[6] will simply produce a beep and blank the
screen for a moment, then return you to the
screen.

[2]/[7] View Next Units Parameters

Since there are parameter changes for each unit,
you can proceed to additional units by pressing
[7] which changes the menu to the rapid WORDS
unit. If, on the other hand, you are only
adjusting this one unit, press [0] (Zero Key)
Okay, which returns you to the SYSTEM GENERATOR
unit display.

All the remaining units are set up in the same
way, with two exceptions: The pressing of "[6]
Data File" in the WORDS, SYNONYMS/ANTONYMS, and
SENTENCES calls individual data files. The
building of these files will be discussed under
the FILE BUILDER section. The default in each of

the three units in which files are found is the EWS data file. That is the file which has been provided as a sample file for your use. As you build other files, you may designate them in the ways that are described in the section on file building.

SYSTEM GENERATOR/[3] LEARNER PROGRESS

After a learner has completed work on one or more units of the system, we have provided a means by which you may review any of his scores, (except the graphic display) for any unit.

To get these scores do the following:

1. Boot the diskette and enter the SYSTEM GENERATOR in the usual way.

2. When the SYSTEM GENERATOR menu appears, select "[3] Learner Progress" and wait for the screen to display the data.

3. Each unit can produce three possible displays:

a. UNIT NOT COMPLETED

If the unit has not been completed, you may view the next unit scores by selecting "[1] NEXT UNIT," or return to the SYSTEM GENERATOR by selecting "[0] OKAY."

b. UNIT IS COMPLETED

When a unit has been completed, the left side of the screen will give you an additional choice. "[2] PURGE" allows you the opportunity to reset the file when you

have viewed the results.

The data on the right hand side of the screen provides you with the numeric data for the learner's performance on that unit.

c. UNIT NOT SEQUENCED

When the sequence has been selected for the learner, and the unit involved has not been included in the sequence, this legend will appear in the upper left of the screen.

SYSTEM GENERATOR/[4] FILE BUILDERS

The FILE BUILDERS represent the very heart of the flexibility built into the COMPU-READ system, and as such, should get your close attention with regards to their use.

There is a file builder available for each of the following units: WORDS, SYNONYMS/ANTONYMS, and SENTENCES. While each is a little different, the principles for operation remain the same.

When the FILE BUILDER menu is selected, first select the desired unit by pressing the appropriate key. All units ask whether you wish to "[1] CREATE NEW FILE" OR "[2] ACCESS EXISTING FILE."

WORDS/BUILDING NEW FILE

1. Select WORDS, then "[1] CREATE NEW FILE."

2. The display on the screen shows an * next to the number of the word being entered. If the word requires lower case letters, simply type in the the characters comprising the word. Immediately after the last letter, press [RETURN] to go to the next word.

3. For each upper case letter do the following:
Press [CTRL] [S] (together) which is equivalent
to the shift key and then type the desired
letter. If the entire word is to be in upper
case, type [CTRL] [S] [CTRL] [S], which is
equivalent to the shift lock on a typewriter. To
release the shift lock, type [CTRL] [S] once
again.

4. You may enter as many words as you wish, up to
200 in any file. These words will be randomly
called when they appear in the WORDS unit.

5. After completing the list, press [ESC] to
enter the file name. In answer to the request for
file name, you may enter any file name of up to
three characters. Then press [RETURN].

6. Next a menu appears, asking you what you wish
to do with the file you have just constructed.
Your options are:

    [1] EDIT fn (file name)

    [2] APPEND fn

    [3] SAVE fn

    [4] DELETE fn

7. To EDIT the file you have just constructed, do
the following:

    a. Press [1] for the edit mode.

    b. When the screen display appears, notice
    that an * is next to word #1 on the word
    list. Use the [U] or [D] keys to move to the
    word you wish to change.

c. When you have positioned the * next to
the desired word, type [E] to allow you to
edit the word. Type in the correction, and
press [RETURN]. Repeat this process until
you have finished with all corrections in
the existing number of words.

d. To REMOVE a word in the list, press [R]
when the * is next to the word to be
removed. This will serve to remove that word
completely, and shorten the file by one
word. There must be at least two words in
the file for this function to operate.

e. After you have completed all editing of
the file, press [ESC] to return to the File
Action Menu.

8. To APPEND the file press [2] and the * will be
seen next to the last word in the previously
completed file. Continue to build the file until
you have it completed, and return to the editing
function menu for the completion of the newly
built file.

9. To SAVE the file, simply press [3], which will
serve to save it to the diskette.

10. To REMOVE the file press [4]. A series of
warning beeps will sound with the caption "PRESS
ESC TO ABORT." If this is not done, the file will
be deleted.

SYNONYMS AND ANTONYMS/BUILDING NEW FILE

1. Select SYNONYMS AND ANTONYMS, then "[1] CREATE
NEW FILE."

2. All functions are exactly the same as with the

WORDS building routines, with one exception. In
this file each number represents a root word,
while the letters S, A, and D represent synonyms,
antonyms, and distractor words respectively.

3. The REMOVE function requires at least two
words in the file to operate.

4. SAVEing, APPENDing, and DELETEing are done in
the same way as was the WORDS file builder.

SENTENCES/BUILDING NEW FILE

1. Select SENTENCES then "[1] CREATE NEW FILE."

2. The SENTENCES, BUILDING/EDITING system is a
little different in that it provides for three
kinds of test nouns in the display. NAMEs,
OBJECTs, and PLACEs are provided for in the unit.
There are thus four lists to be built in the
development of each file.

3. When the SENTENCE building portion of the
program is displayed, enter words in the sentence
in the usual way until you come to the first
person, object, or place which is to be used as a
test word. Press [CTRL] [N], [CTRL] [O], or
[CTRL] [P] to select one of these three
categories for later use in the unit. When you
have completed building sentences, exit from this
part of the file builder by pressing [ESC].

4. Build the word lists as you have done in the
WORDS file builder. You need not have the same
number of words in each of the lists, but all
must contain more than one word.

5. EDITing is done separately by selecting which
list is to be edited. Exit from each list in the
usual way.

ACCESSING FILES

For any of the File Builders, you may ACCESS all
files in that category by selecting "[2] ACCESS
STORED FILE." Doing so provides you with a
catalog of all files contained within the
category. Simply enter the number of the
appropriate file, and then execute any of the
functions described under BUILDING NEW FILES.

SYSTEM GENERATOR/[5] RUN COMPU-READ

After all system setting is completed, and you wish to
use the programs for yourself, or to test them for use
by another learner, select this option to bring you to
the COMPU-READ menu. Select the desired program from
that menu. If you have set a prescribed sequence, be
certain to return to the SYSTEM GENERATOR to purge the
LEARNER PROGRESS files. You can quickly do this after
unit exit by typing "RUN CR.SYSTEM" and then pressing
[RETURN] rather than re-booting the diskette.

IV. ERROR HANDLING

However advanced this computer technology may look, we
are still in the dark ages when it comes to
reliability of programs and the magnetic media on
which they are stored.

For whatever small comfort it may bring, we have
installed some error reporting systems that will at
least tell you what has gone wrong and what, if
anything, you the user can do to fix the problem. If
the problem is with your diskette, read the screen
display, and follow any directions it gives you,
including returning it to us. We also invite you to
call us about any difficulties you may experience or
any innovative applications you make of these
programs. Our number is (213) 346-6783. We look
forward to hearing from you.